REMARKS

Upon entry of this amendment, claims 1-6 are pending in the instant application. Claims 7 and 8 have been cancelled herein without prejudice or disclaimer. Claims 1-6 have been amended, and claims 9-10 have been added. Support for the claim amendments and new claims presented herein is found throughout the specification and in the claims as originally filed. For example, support for the amendments and new claims is found in the specification at least at page 1, lines 15-20; at page 3, lines 23-27; at page 5, lines 5-12; and in Example 1 at pages 12-25. Accordingly, no new matter has been added by the amendments presented herein.

Claim Rejections Under 35 U.S.C. § 112, Second Paragraph

Claims 1-8 have been rejected under 35 U.S.C. § 112, second paragraph as being indefinite for reciting "a) measuring expression of a nucleic acid encoding an antileukoprotease polypeptide in a sample; and b) comparing the expression of the nucleic acid in the test sample to the expression of a nucleic acid encoding an antileukoprotease polypeptide in a cancer reference profile ..." According to the Examiner, the skilled artisan "cannot determine the metes and bounds of what is being claimed with this terminology, without assumption, because as written, only one nucleic acid ... has antecedent basis". (Office Action, page 2).

Claims 1 and 4 have been amended herein. Amended claim 1 is directed to a method of identifying a cancer cell selected from the group consisting of colon cancer, thyroid cancer and renal cancer, comprising (a) measuring expression of a nucleic acid encoding an antileukoprotease polypeptide in a test sample, wherein the nucleic acid comprises the nucleic acid sequence of SEQ ID NO:1 or the nucleic acid encodes a polypeptide comprising the amino acid sequence of SEQ ID NO:2; and (b) comparing the expression of the nucleic acid of step (a) in the test sample to expression of a reference nucleic acid encoding an antileukoprotease polypeptide in a cancer reference profile, wherein a comparable level of expression of the nucleic acid of step (a) in the test sample and expression of the reference nucleic acid in the reference profile indicates the presence of a cancer cell in the test sample.

Claim 4, as amended, recites a method of identifying a cancer cell selected from the group consisting of colon cancer, thyroid cancer and renal cancer, comprising: (a) measuring expression of a nucleic acid encoding an antileukoprotease polypeptide in a test sample, wherein the nucleic acid comprises the nucleic acid sequence of SEQ ID NO:1 or the nucleic acid encodes a polypeptide comprising the amino acid sequence of SEQ ID NO:2; and (b) comparing the expression of the nucleic acid of step (a) in the test sample to expression of a reference nucleic acid encoding an antileukoprotease polypeptide in a normal reference profile, wherein an increase in expression of the nucleic acid of step (a) in the test sample compared to expression of the reference nucleic acid in the normal reference profile indicates the presence of a cancer cell in the test sample.

Thus, Applicants submit that the two nucleic acids recited by amended claims 1 and 4 (and their respective dependent claims) have sufficient antecedent basis, and as such, the skilled artisan could readily determine the metes and bounds of these amended claims. Accordingly, withdrawal of this rejection is, therefore, requested.

Claims 1-8 have also been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for recitation of the term "similarity" in independent claims 1 and 4.

Applicants note that the term "similarity" is not recited by claim 4 as originally filed. Furthermore, independent claim 1 has been amended herein to recite a method of identifying a cancer cell in which "a comparable level of expression of the nucleic acid of step (a) in the test sample and expression of the reference nucleic acid in the reference profile indicates the presence of a cancer cell in the test sample".

As defined in the as-filed specification, *e.g.*, at page 5, lines 5-8, the expression of an antileukoprotease-encoding nucleic acid sequence in a test sample is considered comparable to the expression level of a reference antileukoprotease-encoding nucleic acid sequence in a reference profile "if its expression level varies within a factor of 2.0, 1.5, or 1.0 fold to the level of the antileukoprotease transcript in the reference profile". Accordingly, Applicants submit that the metes and bounds of the amended claims are clear and definite. As such, this rejection should be withdrawn.

Claim 8 has also been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite in light of the phrase "wherein the nucleic acid encoding an antileukoprotease polypeptide comprises the amino acid sequence of SEQ ID NO:2".

Applicants note that claim 8 has been cancelled herein, thereby rendering any rejection of this claim moot. Moreover, claim 1 and claim 4 have been amended to recite a nucleic acid that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO:2. Accordingly, Applicants submit that the amended claims are clear and definite, and this rejection should be withdrawn.

Claim Rejections Under 35 U.S.C. § 112, First Paragraph

Written Description

Claims 1-2 and 4-5 have been rejected under 35 U.S.C. § 112, first paragraph for lack of written description. In particular, the Examiner has indicated that the specification "does not adequately describe a representative number of species from within the broad genus of methods that function, commensurate with the breadth of what is claimed, to identify any cancer cells from any organism by based on the 'similarity' between the expression of an antileukoprotease nucleic acid and the total expression of the nucleic acid in the test sample." (Office Action, pages 4-5).

As described above, independent claims 1 and 4 have been amended herein. In particular, amended claims 1 and 4 (and their respective dependent claims) recite a method of identifying a cancer cell selected from the group consisting of colon cancer, thyroid cancer and renal cancer by measuring expression of a nucleic acid that comprises the nucleic acid sequence of SEQ ID NO:1 or a nucleic acid that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO:2.

The claimed methods are described throughout the as-filed specification. For example, support for the nucleic acids recited by amended claims 1 and 4 is found at least at page 1, lines 15-20; at page 3, lines 23-27 and in Example 1 at pages 12-25 of the as-filed specification. Thus, the disclosure provided throughout the as-filed specification is commensurate with the scope of the amended claims presented herein. Accordingly, Applicants submit that the specification provides sufficient written description of the claimed methods of identifying a cancer cell

selected from colon cancer, renal cancer and thyroid cancer so as to reasonably convey to one skilled in the relevant art that the inventors had possession of the claimed invention at the time the instant application was filed. As such, this rejection should be withdrawn.

Enablement

Claims 1-2 and 4-5 have also been rejected under 35 U.S.C. § 112, first paragraph for lack of enablement. In particular, the Examiner has indicated that "the specification does not reasonably provide enablement for the full scope of what is claimed, which is a method of identifying any cancer cell having any type of cancer by comparing the expression profile of antileukoprotease nucleic acid between test and reference samples". (Office Action, page 8).

As described above, independent claims 4 and 5 have been amended herein to recite methods of identifying a cancer cell selected from renal cancer, thyroid cancer and colon cancer. Applicants submit that the specification is enabling for the methods of identifying a cancer cell recited by the claims as amended herein. Thus, the amended claims are no longer directed to methods of identifying any type of cancer cell by detecting any antileukoprotease nucleic acid. Rather, the amended claims are directed to the identification of a specific subset of cancer cells (*i.e.*, from colon cancer, thyroid cancer or renal cancer) by detecting a particular subset of nucleic acids, namely a nucleic acid that comprises the nucleic acid sequence of SEQ ID NO:1 or a nucleic acid that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO:2.

Thus, Applicants submit that a person of ordinary skill in the art, with the specification in hand and given the state of the art at the time of filing, could make and use the claimed methods of identifying a colon cancer cell, a thyroid cancer cell or a renal cancer cell without undue experimentation. Accordingly, Applicants respectfully request that this rejection be withdrawn.

Claim Rejections Under 35 U.S.C. § 102

O'Brien *et al.*

Claims 1-6 have been rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,602,674 by O'Brien *et al.* ("O'Brien"). According to the Examiner, O'Brien describes "a method of measuring the expression of a nucleic acid encoding an antileukoprotease polypeptide in test samples of ovarian cancer and provide tables which compare the expression

of a nucleic acid encoding an antileukoprotease polypeptide in the test samples of ovarian cancer with the expression profiles of antileukoprotease nucleic acid from both normal and cancerous cells, thereby identifying cancer cells that have ovarian cancer." (Office Action, page 10).

As noted above, independent claims 1 and 4 (and their dependent claims) have been amended to recite methods of identifying a cancer cell selected from colon cancer, thyroid cancer and renal cancer. Thus, the pending claims, as amended, are not directed to methods of identifying ovarian cancer cells.

The O'Brien reference does not disclose or suggest methods of identifying colon cancer cells, thyroid cancer cells and/or renal cancer cells. Thus, the amended claims presented herein are novel over this reference. As such, withdrawal of this rejection is requested.

Au-Young *et al.*

Claims 1-8 have been rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,500,938 by Au-Young *et al.* ("Au-Young"). According to the Examiner, Au-Young describes a nucleic acid sequence, SEQ ID NO: 1024, that is identical to SEQ ID NO:1 of the instant application. (Office Action, page 11).

As noted above, independent claims 1 and 4 (and their dependent claims) have been amended to recite methods of identifying a cancer cell selected from colon cancer, thyroid cancer and renal cancer by detecting the expression of a nucleic acid that comprises the nucleic acid sequence of SEQ ID NO:1 or a nucleic acid that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO:2.

The Au-Young reference, however, does not specifically disclose or suggest using the specific subset of nucleic acids that comprise the nucleotide sequence of SEQ ID NO:1 or nucleic acid sequences that encode a polypeptide that comprises the amino acid sequence of SEQ ID NO:2 in order to identify the claimed subset of cancer cells (*i.e.*, from colon, thyroid and/or renal cancer). Accordingly, Applicants submit that this reference does not destroy the novelty of the claimed methods, and, as such, this rejection should be withdrawn.

Morin *et al.*

Claims 1-8 have also been rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent Application Publication No. 2003/0211498 by Morin *et al.* ("Morin"). In particular, the Examiner has indicated that Morin describes a nucleic acid sequence, SEQ ID NO: 53, that is an ovarian cancer tumor marker that is identical to the nucleic acid sequence of SEQ ID NO:1 of the instant application. (Office Action, page 12).

Again, the pending claims have been amended to recite methods of identifying a specific subset of cancer cells selected from colon cancer, thyroid cancer and renal cancer by detecting the expression of particular nucleic acid sequences, namely a nucleic acid that comprises the nucleic acid sequence of SEQ ID NO:1 or a nucleic acid that encodes a polypeptide comprising the amino acid sequence of SEQ ID NO:2. Thus, the pending claims, as amended, are not directed to methods of identifying ovarian cancer cells.

Unlike the methods of the claimed invention, the Morin reference does not disclose or suggest methods of identifying colon cancer cells, thyroid cancer cells and/or renal cancer cells. Thus, the amended claims presented herein are novel over this reference. Applicants request, therefore, that the Examiner withdraw this rejection.

CONCLUSION

Applicants respectfully submit that the pending claims are in condition for allowance. If there are any questions regarding these amendments and remarks, the Examiner is encouraged to contact the undersigned at the telephone number provided below.

Respectfully submitted,

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